RESPONSE STRATEGY FOR SHELLFISH GROWING AREA DOWNGRADES IN HENDERSON INLET AND THE NISQUALLY REACH

February 2001

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SUMMARY

In the fall of 2000, the state Department of Health downgraded shellfish growing areas in Henderson Inlet and at Nisqually Reach, both within Thurston County. This was not the first time this had happened, in either area. Health issued its first downgrade for the shellfish beds in the rapidly developing Henderson watershed in 1984; more rural Nisqually followed in 1992.

When commercial shellfish beds are downgraded, it means at least two things. First, and most obvious, is the fact that someone's livelihood is threatened. In both watersheds, the growers' ability to harvest their product had already been conditioned by restrictions on the timing of harvest, relative to amounts of rainfall; the new downgrades—a complete *prohibition* against harvest from a portion of the beds in Henderson Inlet at any time, and a further restriction in Nisqually Reach requiring removal of the shellfish to an Approved area for several weeks of decontamination—could make the difference between success and failure.

Secondly, and more insidiously, a downgrade means that all is not right in paradise. A downgrade of a shellfish bed occurs when water quality over the bed is *chronically* so poor that to eat the shellfish from that bed poses an unacceptable health risk to the consumer. That means the way in which we are disposing of our wastes and using the land in the watersheds draining to the sea is not good. Bacteria and other contaminants from nonpoint sources—failing septic systems, poorly managed agricultural practices, stormwater runoff—are making their way to our surface waters, the lakes, streams, rivers and ditches that drain the land to the marine waters. It's not just the marine waters over the shellfish beds that are dirty; water throughout the system may be contaminated. Not just those making their living by providing shellfish for people to eat are affected. All inhabitants of the watershed are affected.

When a downgrade occurs, it triggers two responsibilities. One is that of the county in which the shellfish beds are located. By state law, that county is required to form a shellfish protection district within 180 days and to implement related programs to protect water quality in the affected area. Recently Thurston County embarked upon a public process to guide it in establishing the district and programs, which it intends to have in place within a few months. The other charge is to those state agencies that are responsible for shellfish growing area classification and shellfish sanitation (Health), enforcing state water quality standards and funding actions to identify and remediate pollutant sources (Ecology) and facilitating local government's ability to protect the health of Puget Sound (the Puget Sound Action Team). Under a Memorandum of Agreement, these three agencies are charged with convening those with a stake in the health of the shellfish beds—the growers, the state and local agencies responsible for water quality, the tribes and citizen's groups—and assisting them in developing a holistic, coordinated and aggressive strategy for responding to, and hopefully reversing, the downgrade. This strategy is to be developed as quickly as possible, and eventually will include the actions and programs the County develops under the shellfish protection district.

Thus in November of 2000, the Shellfish Closure Response Team for Henderson Inlet and Nisqually Reach came together for the first time to develop a strategy for responding to the new downgrades in Thurston County. Knowing the implications that the downgrades have for the growers and other inhabitants of the watersheds, members of the team shared a sense of urgency and so looked first to stemming the immediate causes of the decline in water quality, the cumulative inputs of fecal coliform bacteria from many nonpoint sources. As the work progressed, however, the participants added the

issues of land use, growth and development to those that must be addressed if our success in reversing the downward trend in water quality is to be more than simply transitory.

What follows, in narrative and matrix formats, is the strategy developed by the Shellfish Closure Response Team for how to reverse the Henderson Inlet and Nisqually Reach downgrades. For each work item, responsible entities, a timetable, and funding resources, both available and needed, have been designated.

The Henderson Inlet/Nisqually Reach Closure Response Strategy is a living document. Built into it is an adaptive management component that calls for periodic evaluation, modification and improvement with the passage of time. The entities that need to accomplish the work—state agencies, tribes, local governments and citizens groups—have participated in development of the strategy and have been asked to indicate their readiness to take on the tasks by submitting letters of concurrence with the result.

INTRODUCTION

In the fall of 2000, the state Department of Health (DOH) downgraded shellfish growing areas in Henderson Inlet and at Nisqually Reach, both within Thurston County. When shellfish areas are officially downgraded by DOH, the *Puget Sound Water Quality Management Plan* calls for state agencies, local and tribal governments and other affected interests to develop and implement closure response strategies to restore water quality and upgrade the classifications. The Plan calls for these strategies to be developed quickly (within 60 days) and to consist of "concise and aggressive assignments and compliance schedules for correcting the sources of contamination." Further, it is incumbent upon the organizations involved to work together to secure funding from public and private sources for successful implementation of the response strategies. In turn, the strategies should be coordinated with relevant land-use and water quality plans to ensure swift and effective restoration of water quality and to avoid duplication of effort.

Soon after the announcement of downgrades in Thurston County, and in fulfillment of their responsibilities under a Memorandum of Understanding with the state Department of Ecology (Ecology) and the Puget Sound Action Team (the Action Team), DOH convened a response strategy core group to initiate development of an action plan. At the first meeting of this group, which consisted of representatives of shellfish growers, tribes, local and state agencies and citizen's groups, Thurston County and the Action Team agreed to share the role of lead agency for the response development process. The core group agreed to pursue development of strategies for the two growing areas together, as far as practical, in the interest of efficiency and given the significant overlap in stakeholders involved in the two areas. The group defined a timetable of six meetings, to be facilitated by Action Team staff, from November 2000 through January 2001, and a goal of completing the strategies by the end of January. The initial group was expanded to a "response team" that included staff from additional county departments, water quality field agents from UW and WSU, and a representative of the Nisqually Wildlife Refuge (see **Appendix A** for a list of the Closure Response Team members).

In setting out to develop the response strategies, the Closure Response Team recognized the need to address the following:

- The goal(s), both short- and long-term, of the response effort, with one or more benchmarks to measure success of implementation
- Problem statements
- Activities and programs currently underway that address water quality issues in the Henderson Inlet and Nisqually/McAllister watersheds

- Activities and programs needed to be developed to respond to the closure and meet the goal(s) of the strategy
- Lead agencies and funding resources for new and on-going programs and activities that meet the goal(s) of the strategy

The Team completed a single strategy document with distinct action plans for the two shellfish growing areas in February 2001. The task matrices for these action plans are presented in **Appendices D and E** and indicate the agency or entity responsible for each task, the timeline for implementation, and the availability and source of funding. A request for letters of concurrence with the strategy was sent out to implementing agencies at that time.

The Henderson Inlet/Nisqually Reach strategy recognizes the need for both immediate and longer-term goals and actions. It also anticipates the establishment of a shellfish protection district and associated water quality protection activities by Thurston County. In general, the strategy calls for the reduction of pollution by voluntary actions fostered by technical assistance and education. An effective program of source identification and enforcement of existing regulations will address non-compliant parties. This strategy recognizes immediate and long-term information needs, to be met through sampling and monitoring programs. The focus of the strategy is to identify and, where possible, reduce the contribution of fecal pollution from all sources, but especially:

- Failing on-site septic systems
- Agricultural practices
- Stormwater runoff

This strategy assumes environmental benefits from actions already under way. It anticipates full and timely advantage will be taken of partnership opportunities that arise between public agencies and private landowners. Many of the proposed actions are under way or will be implemented through existing resources; to fully implement the strategy, however, participating agencies require additional funding.

Before the completion of the strategy development effort, DOH announced the imminent downgrade of an adjacent area in Henderson Inlet. The Closure Response Team anticipates that this strategy will be revised to account for the additional downgrade at the appropriate time.

Goal And Benchmarks

The goal of this strategy is to improve water quality in Henderson Inlet and Nisqually Reach in order to restore and protect shellfish growing areas.

Benchmark #1: Restore the shellfish classifications of the affected areas in both watersheds to Conditionally Approved with a criterion of one inch of rainfall in 24 hours within two years.

Benchmark #2: Restore the shellfish classifications of the affected areas in both watersheds to Approved within four years.

BACKGROUND

History of the Growing Area Classifications

Henderson Inlet: In 1984 DOH changed the classification of 180 acres of shellfish growing area in Henderson from Approved to Conditionally Approved, citing contamination from rural nonpoint sources. At that time, the designated area was closed to shellfish harvest for five days following a rainfall of greater than one inch in a 24-hour period. In 1985 120 acres in the southern portion of the Conditionally Approved area was reclassified as Prohibited (see maps, pp. 5-6). Eventually, DOH adjusted the criterion for the Conditionally Approved classification to the more restrictive 0.5 inch in 24 hours in response to declining water quality. Finally, based on the results of water samples collected between September 1996 and December 1999, DOH downgraded an additional eight acres of the Conditionally Approved area to Prohibited in November 2000.

Nisqually Reach: In 1992 DOH reclassified the growing area at Nisqually Reach from Approved to Conditionally Approved, with closures occurring after one half of an inch of rain in 24 hours. One year later DOH adjusted the closure criterion to one inch in 24 hours, based on improvements in water quality and a re-evaluation of the data and rainfall correlation. In 1999 in response to declining water quality and after consultation with local shellfish growers, DOH established a one year voluntary "no harvest zone" in the vicinity of the eastern-most water quality monitoring stations of the growing area (225 and 227, p. 6). In 2000, improved conditions at the western end of the Conditionally Approved area allowed DOH to upgrade 20 acres of geoduck tracts there to the Approved status. At the same time, however, conditions at the east end of the area continued to decline. DOH first extended the voluntary no harvest agreement with the growers, but then in November reclassified about 74 acres at the east end of the area from Conditionally Approved to Restricted.

Problem Statement

Both Growing Areas

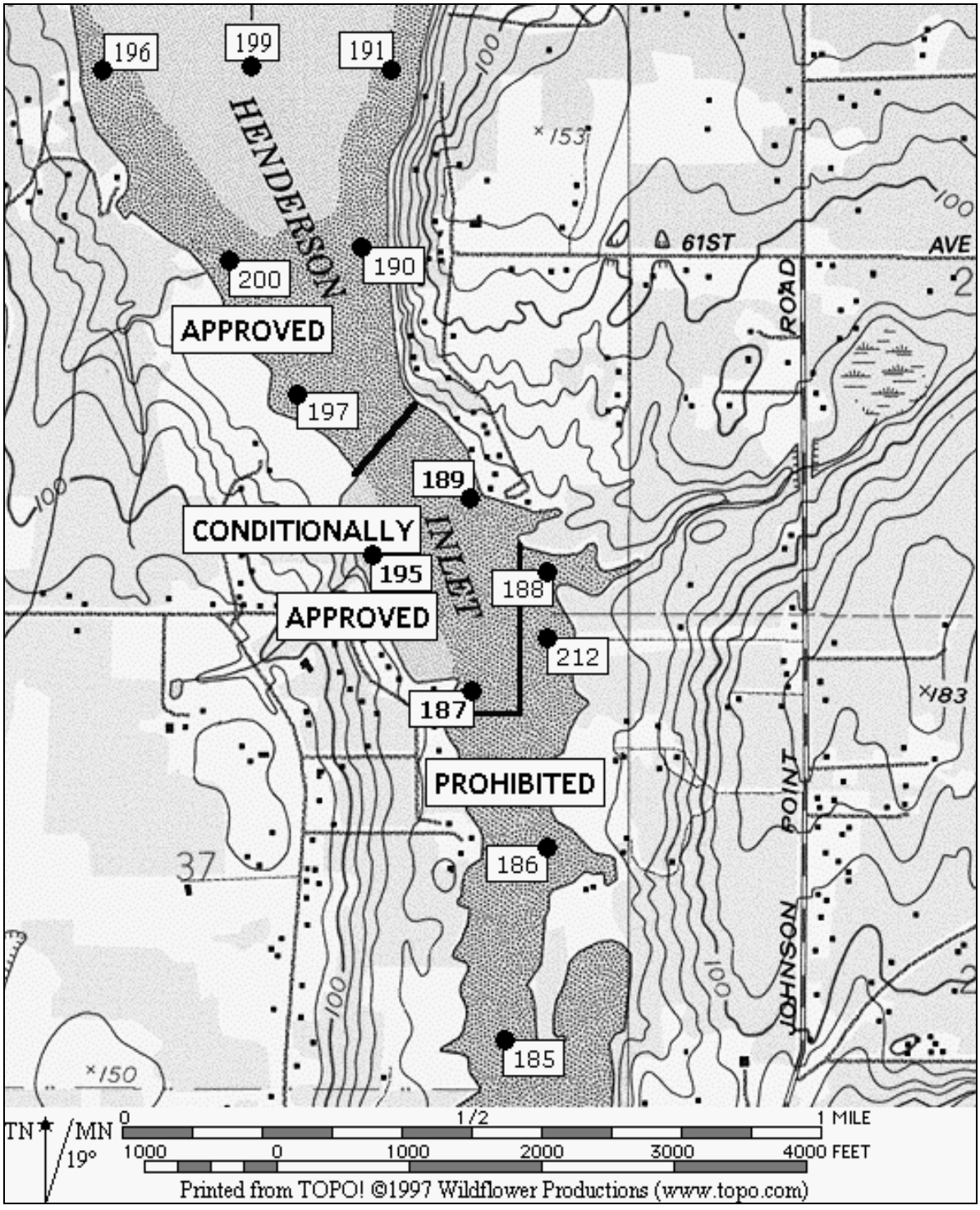
The state Department of Health's annual growing area review for 1999 indicated that portions of the Conditionally Approved shellfish grounds in both areas would no longer meet the National Shellfish Sanitation Program Conditionally Approved water quality standard under their current conditional management plans. The Conditionally Approved classifications in both areas are based on a predictable relationship between relatively dry weather conditions and good water quality. In recent years this relationship has begun to weaken.

Fed by stormwater runoff and other inputs, the freshwater streams and their tributaries that flow directly into the shellfish harvest areas are major pollutant transport mechanisms in both watersheds. Woodland and Woodard Creeks are the largest tributaries to Henderson Inlet. McAllister Creek is believed to have the greatest influence on the quality of water over the shellfish beds in Nisqually Reach. An obvious relationship between low salinity and high bacteria counts can be seen in the water data from both areas. It is becoming increasingly clear that this relationship is due more to increased background levels of bacteria in the streams than it is to fluctuations in runoff. Past shoreline surveys in both areas have concluded that the problem is one of nonpoint source pollution stemming from a combination of failing on-site sewage systems, poor agricultural practices and stormwater runoff.

HENDERSON INLET

Sampling Stations and Classification Boundaries

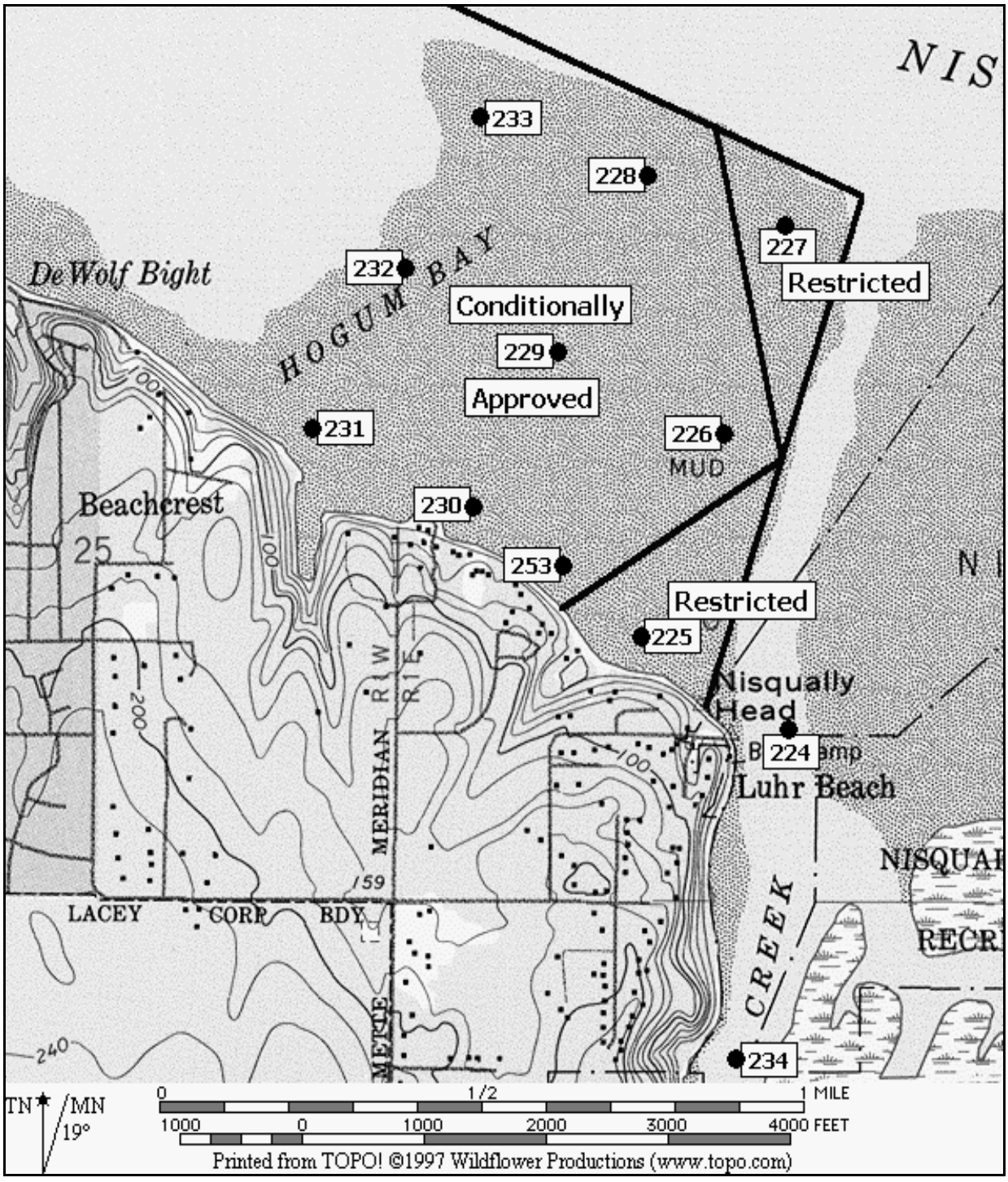
Status dating from DOH Reclassification Order: October 18, 2000



NISQUALLY REACH

Sampling Stations and Classification Boundaries

Status dating from DOH Reclassification Order: October 31, 2000



Stormwater. Portions of the urban areas of the cities of Lacey and Olympia and local and interstate highways are within the watersheds that drain to Henderson Inlet and McAllister Creek/Nisqually Reach. Stormwater runoff from urban areas and roads has been well documented to contain significant levels of bacteria as well as metals, petroleum and other contaminants derived from diffuse sources in the urban environment. The cities and county have stormwater utilities that support stormwater quantity and quality management programs. All three jurisdictions have capital facility improvement plans to address flooding and water quality problems at priority sites. Due to the utilities' need to concentrate their efforts and resources on priority streams and stormwater systems, there has been little monitoring of treatment facilities or of unmitigated stormwater outfalls for fecal coliform bacteria. In addition, there is some concern that rural road drainage system maintenance practices may contribute to the presence of suspended solids, and thus to the survivability of bacteria, in stormwater runoff. The state Department of Transportation (WSDOT) does not routinely monitor highway runoff for bacteria. WSDOT requires stormwater BMPs, which can reduce bacteria levels in stormwater, for new construction, and its program for retrofits of existing highways will be improving BMPs over time. The agency plans several improvements in stormwater BMPs for the Henderson and McAllister watersheds during the next several years.

Sewer. The wastewater utilities of the cities of Lacey and Olympia and the LOTT (Lacey-Olympia-Tumwater-Thurston County) Wastewater Alliance manage their respective sewer systems independently. These systems primarily serve the urban areas in the watersheds. While the sewerage systems are potential contributors of fecal coliform bacteria, they are highly managed systems, and are regularly inspected and maintained to ensure there are no illicit connections to stormwater infrastructure or leaks that might enter surface water bodies. These systems are equipped with numerous redundant alarms, telemetry and emergency storage capacity to ensure that in the event of a system failure, the likelihood of negative impacts to surface and groundwaters is very low.

Wildlife. There is little doubt that wildlife—both mammals and birds—contribute to the bacterial contamination of surface waters in these watersheds. Pinniped (seals and sea lions) populations appear to be high in both watersheds, rafting on logs in Henderson and preying on salmon at the mouth of the Nisqually River In a joint effort with Dr. Mansour Samadpour of the University of Washington, Thurston County is undertaking a DNA typing study for Henderson Inlet which will help identify pollutant sources through differentiation of human and non-human E. coli. This information will cast some light upon the role of wildlife in contamination of the marine waters over the shellfish beds. Further investigations and actions will depend on the outcome of the current study. (See also *Unfinished Agenda,* p.16).

Henderson Inlet

Henderson Inlet and several of its freshwater tributaries, including Woodland and Woodard Creeks, fail to meet the state water quality standard for fecal coliform bacteria and are on the 303(d) list of impaired water bodies. An examination of the circulation pattern in the southern part of the inlet indicates that Woodland Creek's water quality is a major factor influencing marine water quality in the lower, or southern, inlet. Land use activities in these sub-watersheds appear to be contributing unacceptable loads of bacteria to the streams, and subsequently to the marine water.

On-site Septic Systems. Henderson Inlet's 19.5 miles of shoreline have approximately 14 houses per shoreline mile. Over the past seven years, Thurston County's Environmental Health Division has conducted on-site sewage system evaluation projects along the marine shoreline and along a segment of Woodland Creek. Although 275 systems were identified, the County received permission to test only 94. Eleven percent of those tested were found to be failing. In 20 percent of the systems tested, dye flushed into the systems was recovered on the surface or along the shoreline, but a fecal

coliform bacteria sample with a result of over 200 organisms/100 ml or greater was not obtained.. These systems are considered "suspect." Although all those found to be failing through dye and confirmatory bacteria samples were corrected, a large number of systems (66%) still have not been evaluated. To date, few septic system evaluations have been done in upland areas of the watershed or adjacent to streams and drainages as well.

Agricultural Practices. A farm survey of the Henderson Inlet watershed conducted in 2000 by the Thurston Conservation District identified 22 farms with significant water quality problems. These include horse stables, several small farms with horses, llama farms and beef cow operations. The problems on these farms include lack of manure storage; animal access or manure runoff to surface waters; mud and runoff problems caused by poor confinement area management; poor pasture production; and absence of roof runoff management systems. The farm survey also identified a number of other farms with possible water quality problems, primarily horse operations that are adjacent to surface waters. Many of these farms have sloping pastures on clay soils with fair to moderate pasture production and a potential for manure management problems.

In Henderson an increased rate of subdivision of larger farms is resulting in a similar increase in the number of smaller farms. These farms tend to have small pastures with one or two horses, a situation that often results in poor pasture production, runoff problems and mud problems.

Nisqually Reach

The Nisqually Reach, Nisqually River and McAllister Creek do not meet the state water quality standard for fecal coliform bacteria and are listed on the 303(d) list of impaired water bodies. Results of studies by DOH and the Nisqually Tribe have strongly suggested that of the two, McAllister Creek has a much more significant impact on the shellfish growing area than does the Nisqually River. In 1996 the Tribe found a significant correlation between fecal coliform bacteria levels in McAllister Creek and bacteria concentrations in the marine water over the shellfish beds, a finding supported by a limited hydrographic study conducted by DOH in 1999.

On-site Septic Systems. Between 1994 and 1999 Thurston County surveyed 165 of the 271 on-site sewage systems located along the Reach's 11.8 miles of marine shoreline in the commercial area of the I-5/Martin Way interchange. Forty-four systems (27%) were identified as failing and were repaired. An additional 21 systems (13%) were identified as "suspect." One hundred and six (39%) on-site systems remain to be evaluated, including those serving a limited number of residences adjacent to McAllister Creek.

Agricultural Practices. One of the predominant land uses in the Nisqually watershed is agriculture, including commercial beef cattle, dairy cattle and vegetable growing operations. The area has extensive drainage systems with discharges to McAllister Creek through tide gates. A farm survey of the Nisqually Reach sub-basin of the Nisqually Valley conducted by the Thurston Conservation District in the fall of 2000 identified sixteen high priority farms with known, significant water quality problems. Most were small horse, beef cow and llama operations, but larger commercial operations were also included. The problems identified include lack of manure storage; mud and runoff problems caused by poor confinement area management; poor pasture production; and absence of roof runoff management systems. The farm survey also identified a number of other horse farms that were likely to have water quality problems as well.

Water quality monitoring to isolate specific segments of the creek that are receiving high loads of bacteria is a tool frequently used to identify locations of nonpoint sources of pollution. The application of this method is problematic in McAllister Creek. The Nisqually Tribe has reported that fecal coliform

levels in McAllister are chronically elevated and influenced by the effect of tides, historic alterations to the creek channel during highway construction (I-5 and Martin Way), and flow restrictions due to water withdrawals. Flood tides mix fecals from various sections of the creek so that concentrations are relatively constant throughout the length of the creek; channel alterations may be reducing effective flushing during ebb tide.[1] This drainage situation appears to store and concentrate fecal coliform inflows, releasing them to the Reach in tidal pulses.

Efforts to Prevent Water Quality Degradation

The Henderson and Nisqually Reach watersheds have been and continue to be the subject of intense management efforts, including basin and river management planning, nonpoint source pollution prevention planning (Henderson only), and water resource and habitat restoration planning and implementation. Through these efforts, numerous pollution sources have been identified and corrected. For example, in Henderson watershed, Thurston County has conducted on-site sewage system evaluation projects for the past seven years; however, the County has received permission to test only about a third of the systems identified there. Of those that were tested, quite a few (11%) were found to be failing, and more were considered "suspect."

Similarly, Thurston Conservation District has completed some 44 Conservation Plans for farms in the Henderson watershed in the last 10 years. The Conservation Plans identify best management practices (BMPs), including waste management systems, waste storage structures, roof runoff management, upland and wetland wildlife management, fencing, nutrient management, prescribed grazing and other practices intended to improve water quality and production. Planning and implementation are voluntary, but on average, landowners implement 70 per cent of BMPs, and more if cost-share funds are available.

Following the downgrade in 1992, a closure response strategy development group made up of stakeholders and agencies met voluntarily and developed an action plan for the Nisqually/Hogum Bay shellfish growing area. As a result of that action plan, significant efforts were made to identify and correct sources of pollution. Between 1994 and 1999 Thurston County surveyed 61 per cent of the on-site sewage systems located along the shoreline. Of those, 27 per cent were identified as failing and an additional 13 per cent were identified as "suspect." Thurston Conservation District has completed approximately 85 conservation plans for farms in the Nisqually Watershed, about half of them in the last 10 years. Twenty-six of those plans were completed over the last five years in the McAllister sub-basin.

Appendices B and C list many of the activities and programs currently being implemented by various agencies to protect water quality in the Henderson and Nisqually Reach/McAllister watersheds from pollution. Prominent among them are the many programs and facilities designed to remediate the impacts of urban stormwater runoff on surface waters, which have been put in place by Thurston County, Olympia and Lacey under Clean Water Act initiatives and which are funded by their stormwater utilities. The appendices also list important efforts ongoing in water quality monitoring, public education and involvement, habitat protection and restoration, and other venues dealing with land use issues.

[1] Observations suggest that channel restriction through the I-5 overpass and widening and deepening of the channel above created increased channel volume, increasing the retention time of creek flow within this section and reducing flushing. If this is occurring, it could e causing a reflux of bacteria that may increase concentrations.

CLOSURE RESPONSE STRATEGY

Appendices D and E provide the task matrices for the strategies developed in response to the downgrades at Henderson Inlet and Nisqually Reach as constructed by the Closure Response Team. Tasks are organized by the following objectives:

(1) Establish a coordinated response program
(2) Establish a shellfish protection district and program
(3) Establish jurisdictional responsibilities and options
(4) Identify and control agricultural sources
(5) Identify and control stormwater sources
(6) Identify and control on-site septic system (OSS) sources
(7) Monitor water quality
(8) Expand public information and involvement programs
(9) Review and comment on land use decisions

For each task, the following are listed:

- *Responsible agency or entity* – those whose involvement is required for successful implementation
- *Timeline* – the time and timing required for successful implementation of the task
- *Funding available* – whether or not financial resources for successful implementation of the task are known and available, for each implementer
- *Funding Source* – resources identified by the implementers for successful completion of the task, for each implementer. If this cell is blank, the availability of resources for task implementation is unknown at the time of completion of this strategy. *By concurring with this strategy, implementing agencies indicate their willingness to pursue funding resources for the task with due haste.*
- *Done* – task has been successfully implemented. The Implementation Review Committee (Task 1.4) will update this column quarterly.

For clarity, the task matrices for the Henderson Inlet and Nisqually Reach downgrades are presented separately, and each is complete unto itself. In the following narrative, tasks are keyed to entries in the matrices (e.g., Task 1 under Objective 1 in the Henderson Inlet matrix = H1.1)

Objective 1. Establish a Coordinated Response Program

Both Watersheds - The state Department of Health (DOH) will convene a core response group within 30 days of the downgrades. This group will establish a work plan and timeline, identify a lead agency for strategy development, and invite missing, key stakeholders to participate in the Closure Response Team. As co-lead agencies, Thurston County (TC) and The Puget Sound Action Team (PSAT) are responsible for completion of the closure response strategy by the Closure Response Team and will seek concurrence from implementers with the tasks assigned them. Action Team staff will facilitate and coordinate the efforts of the Closure Response Team.

Henderson Inlet – Acting as the Implementation Review Committee (IRC) for the Henderson response strategy, the Henderson Inlet Watershed Council will convene quarterly meetings of stakeholders; review implementation of the response strategy with the stakeholders and update the strategy to record changes in task status and according to the principles of adaptive management; compose an annual report card which describes progress in implementation; and provide information to implementers and

the inhabitants of the Henderson watershed on the status of strategy implementation twice a year. The Henderson Watershed Council needs technical and financial assistance to undertake its task as IRC.

Nisqually Reach - Acting as the Implementation Review Committee (IRC) for the Nisqually Reach response strategy, the Nisqually River Council will convene quarterly meetings of stakeholders; review implementation of the response strategy with the stakeholders and update the strategy to record changes in task status and according to the principles of adaptive management; compose an annual report card which describes progress in implementation; and provide information to implementers and the inhabitants of the Nisqually Reach/McAllister watersheds on the status of strategy implementation twice a year.

Objective 2. Establish a Shellfish Protection District and Program

Both Watersheds – RCW 90.72 requires Thurston County to establish one or more shellfish protection districts and programs to curb the loss of productive shellfish beds caused by nonpoint pollution following the downgrade of the growing areas in Henderson Inlet and Nisqually Reach. By July 2001 Thurston County shall draft and adopt an appropriate program, which defines the boundaries of such district(s), tasks to be implemented, and a means for funding implementation. Implementation of the Shellfish Protection District program shall commence upon adoption of the program.

Objective 3. Establish Jurisdictional Responsibilities and Options

Both Watersheds – Referring to the state Department of Health, RCW 43.70.185(1) contains the following directive:

> "The department may enter and inspect any property, lands, or waters, of this state in or on which any marine species are located or from which such species are harvested, whether recreationally or for sale or barter, and any land or water of this state which may cause or contribute to the pollution of areas in or on which such species are harvested or processed. The department may take any reasonably necessary samples to determine whether such species or any lot, batch, or quantity of such species is safe for human consumption."

Historically the identification of nonpoint sources of pollution by local jurisdictions has been hampered by issues of access to private property for the purpose of inspection of on-site septic systems, agricultural best management practices (BMPs) and other waste management systems. The Closure Response Team felt that the conditions under which the option for source identification contained in the above directive would be applied should be determined. DOH shall request an opinion from the Attorney General's Office on that question.

Objective 4. Identify and Control Agricultural Sources

Both Watersheds - In order to identify and reduce the contribution of agricultural practices to bacterial contamination of water quality, Thurston Conservation District (TCD) will inventory farms in the Henderson, McAllister and Nisqually Reach watersheds, map them on GIS, and then use maps and other available information to identify those farms that are likely to be in need of technical assistance and farm planning. In addition, the state Department of Ecology will examine all farms in the McAllister sub-basin of the Nisqually watershed not currently working with TCD, and, with technical assistance from the Nisqually Tribe, will map and sample inputs to McAllister Creek at the tide gates to determine the likelihood of contribution to fecal contamination.

Ecology will refer all farms in the McAllister sub-basin that are in need of farm planning and best management practices (BMPs) implementation to TCD. Both Thurston County and Ecology will use this information to actively apply available regulations (the County's Nonpoint Ordinance and state water quality laws) to ensure compliance of farm owners in both watersheds.

Following the identification of problem farms in the watersheds, TCD will use available grant funding to prioritize farm planning needs according to the likelihood of impact on surface waters that drain to the shellfish growing areas, and then provide technical assistance for farm planning accordingly. The conservation district needs additional funding for the inventory/ mapping task in the McAllister/Nisqually Reach area and for farm planning.

Finally, Ecology, Thurston and TCD will review and, if necessary, revise their memorandum of understanding (MOU) that governs coordination of their technical assistance and regulatory roles for agricultural practices.

Objective 5. Identify and Control Stormwater Sources

Both Watersheds - In order to determine whether urban stormwater runoff is a significant contributor of bacteria to surface waters that affect the shellfish growing areas, Thurston County and the cities of Lacey and Olympia, with DOH's assistance, will develop a representative sampling process for testing mitigated and unmitigated outfalls in the watersheds. Following completion of mapping of outfalls by the three jurisdictions, representative outfalls of both types will be screened for levels of fecal coliform bacteria. The Department of Transportation will also sample its stormwater outfalls in cooperation with the three jurisdictions and Ecology. If the results show increased bacteria concentrations as water moves through stormwater treatment facilities, further evaluation will be undertaken to verify initial results, the reason for the increase and what alternatives should be considered when designing future facilities. Corrective actions will be undertaken by the jurisdictions through capital facilities plans. Those for problems arising from unmitigated facilities will be of highest priority. If initial screening and verification indicate that publicly-owned mitigated facilities are contributing to fecal loading of surface waters, capital facilities plans will be revised accordingly to allow for corrective action. If problem facilities are privately-owned, corrective actions will be the responsibility of the facility owners.

The diking, channelization and realignment of McAllister Creek as a result of the improvements to Old Highway 99 and the I-5/Martin Way interchange many years ago changed the hydraulic characteristics of the creek, which has likely reduced flushing and increased residence time. The state Department of Transportation (WSDOT) will evaluate opportunities to restore the site and enhance its natural habitat functions.

Enhanced survivability of fecal coliform bacteria by the presence of suspended solids and fine sediment in a water body is well documented. Thurston County is currently examining its road maintenance practices as part of its response to the listing of Puget Sound chinook under the Endangered Species Act. The County's Roads and Transportation Department will review their drainage system maintenance practices with assistance from the County Storm and Surface Water Utility as soon as possible. These practices will be modified to minimize the generation of suspended solids and to provide suspended solids removal.

Education of the public about water resource and pollution issues is an extremely important component of the closure response strategy. The cities and the County, TCD, Henderson Inlet Watershed Council and Nisqually River Council will continue their efforts in this arena (cf. "Public Information and Education Programs," Appendices A & B), with special emphasis on the issues, goals and objectives of

this strategy. In addition, Thurston County (Henderson Inlet and Nisqually Reach) and the cities of Lacey and Olympia (Henderson Inlet) will establish public outreach and education programs for owners of private stormwater facilities. Additional funding for such programs is required.

Objective 6. Identify and Control On-site Sources

Both Watersheds: In order to ensure that on-site sewage disposal systems are functioning properly and not contributing bacteria and other sewage-related pollutants to surface waters, Thurston County will add an element to its existing operation and maintenance program establishing a regular evaluation program for on-site systems. The systems to be included in the evaluation program should be those, which if failing, could pose a risk to surface water quality.

Specific neighborhoods or shoreline areas are occasionally identified where existing conditions may be contributing to area-wide on-site system failures. Examples of such conditions include poor soil conditions, seasonal high ground water levels, and system age. Thurston County will conduct special studies in such neighborhoods to determine if area-wide system failures are occurring.

Homeowner education on the proper operation and maintenance of on-site systems in order to promote system longevity and proper function is an essential element. Thurston County will continue the current education components of the operation and maintenance program and expand them as appropriate. Current activities include workshops in several locations each year, a septic help line for answering homeowners' questions, homeowner technical assistance to diagnose problems, and a mailing to homeowners every three years providing information specific to their system and recommended maintenance. Washington State University Cooperative Extension will continue to offer an on-site sewage system course for realtors, and Washington Sea Grant will continue to provide technical assistance to local jurisdictions and others on on-site system operation, maintenance and education.

It is recognized that incentives are often helpful in encouraging people to change practices. The local jurisdictions will establish a program of incentives for homeowners that promote proper operation and maintenance of on-site systems.

Thurston County and the City of Olympia provide low interest loans for the repair of failing on-site sewage disposal systems. These loan programs will continue to be available to assist homeowners in the financing of system repairs.

Objective 7. Monitor Water Quality

Both Watersheds: Direct sampling of the quality of marine and fresh waters for fecal coliform bacteria, both to help identify sources of pollution and to evaluate corrective measures, is an essential component of this strategy.

DOH will maintain its current level of monitoring of marine water quality over the shellfish beds in both watersheds; continue to monitoring freshwater quality at stations on the lower Nisqually River to verify levels of bacterial transport; add additional freshwater stations on the river and McAllister Creek (out towards the mouth) as warranted; follow up on leads provided by other efforts and establish additional marine and freshwater stations in the watersheds to identify sources of pollution within the limits of available staff time; and provide monthly summaries of marine and freshwater monitoring data to implementing agencies and affected shellfish growers.

In addition to the sampling to help identify agriculture inputs to McAllister Creek, Ecology will continue to monitor freshwater quality at a single station on the lower Nisqually River, and will conduct TMDLs for Henderson basin (the Inlet, and Woodland, Woodward, Dobbs and Libby Creeks) and Nisqually basin (Nisqually Reach, McAllister Creek, Nisqually River, Ohop Creek). These "total maximum daily load" studies will help fill existing data gaps in source identification from previous studies. The expectation is that bacterial load allocations for Woodland Creek in Henderson and McAllister Creek in Nisqually may well need to be based on standards that are more restrictive than current state standards for freshwater, if state marine water quality standards are to be met in the receiving waters.

Lacey and Olympia (and Tumwater) cooperatively support an ambient monitoring program implemented by Thurston County. Several years ago, in response to budget pressures and an increased reliance on biological monitoring, this program reduced the number of freshwater sites being monitored for classic water quality indicators, including fecal coliform. As a result, information on water quality trends is lacking. Thurston County, Lacey and Olympia will design a broader ambient water quality monitoring program in the Henderson and McAllister watersheds, to be implemented by the County as soon as funding for this work can be obtained.

Finally, Thurston County's Roads and Transportation Services will conduct water quality monitoring to gauge its success in improving practices for maintenance of drainage systems along county roads.

Objective 8. Expand Public Information and Involvement Programs

Both Watersheds: Thurston Conservation District will continue to provide information on responsible farming, water quality and habitat restoration to members of the watershed communities in a variety of media formats. Additional funding for this activity is needed for the Nisqually Reach/McAllister Creek area. TCD will join the County, the cities, the Henderson Inlet Watershed Council, the Nisqually River Council, and WSU Cooperative Extension in using public events, local media, youth education programs, outreach materials and other means to increase the public's understanding of water quality and watershed health issues. The jurisdictions' stormwater utilities fund some of this activity, but all implementers of these tasks will require additional resources.

Henderson Inlet: Thurston County, TCD, Ecology, DOH, the Puget Sound Action Team and WSU Cooperative Extension will assist the Henderson Inlet Watershed Council (HIWC) in efforts to attract an expanded membership from the residents of the watershed. This will allow the HIWC to increase its effectiveness as an advocate for good water quality in the watershed and as an implementation review committee for the Closure Response Strategy.

The Thurston County Environmental Education Technical Advisory Committee (EETAC) will explore the idea of developing a neighborhood-based, water-quality advocacy program for Henderson watershed residents that would raise awareness and foster ownership of clean water. Consisting of representatives of most of the entities that provide environmental education in the County, EETAC contains the expertise to design such a program and find an appropriate sponsoring agency for it. Sponsored by the Thurston Conservation District and supported by funding from local agencies and occasional state and federal grants, the teachers and students of the Global Rivers Environmental Education Network program (GREEN) work with local government and resource agencies, colleges, tribes, area businesses, and civic organizations to conduct integrated watershed investigations. Data collected in those investigations are made available to local resource agencies and help "red flag" sites in need of further investigation. South Sound GREEN will continue to involve teachers and students in the watershed in water quality monitoring and restoration of native habitats . Current funding for this activity expires at the end of 2002.

Nisqually Reach/McAllister Creek: Thurston Conservation District will pursue funding for developing a neighborhood-based, water-quality advocacy program for watershed residents that would raise awareness and foster ownership of clean water.

Sponsored by Yelm Community Schools, the Nisqually River Education Project (NREP) will continue to involve teachers and students in the watershed in water quality monitoring. Monitoring sites that could provide "early warning" information of declining water quality will be identified, and data made available to interested parties. Funding to sustain this program will be required.

Objective 9. Review and Comment on Land Use Decisions

Both Watersheds: Water quality is a land use issue. With the possible exception of bacteria from wildlife, the contamination that has produced the downgrades of shellfish beds in the Henderson and Nisqually Reach/McAllister Creek watersheds has resulted entirely from the ways we have used, and misused, land in those watersheds. This impact will increase as growth continues. As Henderson Inlet watershed continues to be developed, for example, population density along the shoreline increases, bringing with it more and more waste disposal problems, whether from human or domestic animal sources. Further up the watershed, rapidly increasing impervious surface coverage of the landscape directly affects the quantity and quality of runoff, as well as the hydrology and habitat of receiving waters. In the more rural portions of both watersheds, a proliferation of smaller, so-called "hobby farms" brings with it a greatly increased risk of contamination from domestic animal wastes. The impacts of urbanization eventually will be felt there, too, as development fills out the Urban Growth Management Areas that extend into these watersheds.

In order to ensure that land use policies are developed and implemented with an understanding of their impacts on our surface water quality and aquatic resources in these watersheds, Thurston County and the cities of Lacey and Olympia, as appropriate, will:

(i) Evaluate development proposals for their potential impacts upon the shellfish resource, and take action to avoid or mitigate such impacts;

(ii) Inform the Implementation Review Committees in each watershed about opportunities to review and comment on development proposals; and

(iii) Evaluate the impacts of Comprehensive Plan goals, objectives, policies and implementing (development) regulations upon the shellfish resource in these watersheds during the review process mandated by the Growth Management Act; where those impacts are detrimental, make appropriate revision to policy and regulations. [The "Timetable" and "Funding Source" entries for Tasks H9.4 and N9.4 may change, depending on the outcome of the 2001 session of the Washington State Legislature.]

Thurston County, Lacey and Olympia currently address the impacts of the runoff from impervious surfaces through their stormwater management programs and utilities. In addition, the cities have begun to address the relationship between development types and impervious surface. In 2000, Lacey passed an ordinance that encourages the incorporation of low impact development (LID) practices in development design, and Olympia currently is working on a revision of development standards to accomplish that goal. The County and both cities will continue to evaluate and incorporate additional means to encourage LID and to minimize effective impervious surface and stormwater runoff.

The Unfinished Agenda

At the time of the completion of this draft of the Closure Response Strategy for the downgrades in Henderson Inlet and in Nisqually Reach, a number of important issues and negotiations have yet to be resolved. The Closure Response Team anticipates that work will continue on these issues, and that the task matrices and this narrative will be revised to account for new information and better understanding of roles as soon as possible, but no later than the next review by the Implementation Review Committees. Some of the things remaining to be resolved are:

- The state Department of Health's role under RCW 43.70.185 *(Tasks H3.1; N3.1)*

- The roles and responsibilities of the state Department of Transportation. Brought onto the Response Team belatedly, WSDOT has not had sufficient time to consider the best way to participate in reaching the goals and objectives of the strategy. WSDOT's assignments (H5.1-4; N5.1-6) are provisional and will be refined as the agency confers with other responsible entities to coordinate activities and maximize efficiencies.

- As mentioned above (p. 5), the role of wildlife populations in contributing to the downgrades in Henderson and Nisqually Reach is poorly understood. Thurston County is currently conducting a DNA study to help identify sources of fecal pollution in Henderson Inlet. The role of wildlife in downgrades has been of interest in other areas of Puget Sound as well, and in at least one case, they seem to have been a prime factor. At Dosewallips State Park on Hood Canal, the relocation of a seal-rafting site apparently made an upgrade of the shellfish beds there possible. In watersheds as large and complex as Henderson and Nisqually, however, it is unlikely that any single factor will be so significant. Rather, as we gather more information it is likely that the wildlife factor will be one of many, but also one whose impacts we will have to manage in order to maintain clean water over shellfish beds. And of course one of the first places to start is to take into account our own influence, through the ways we use land and water, on, for example, the tendency of wildlife to congregate on or near water. The log booms, open and grassy waterside lawns, and landfills that we provide for seals, geese, and seagulls, respectively, are some examples. We hope that the source identification work being done in Henderson and other watersheds of the region will better inform this strategy in the near future.

- During the development of the response strategy, members of the Team expressed dissatisfaction with the tools currently available for identifying both health risks and sources of contamination associated with shellfish. On the one hand, arguments persist about the utility of the fecal coliform bacterial indicator (the current national regulatory standard) in evaluating estuarine water quality in shellfish harvesting areas. Ecology's recent proposal to shift to using *enterococci* to indicate the presence of pathogens in fresh and marine waters has both added to and complicated the debate. On the other hand, a recent survey of fecal contamination source identification methods conducted by Ecology indicated a number of promising lines of research to pursue. While these issues are beyond the scope of the closure response strategy, the Response Team hopes that DOH, Ecology and other appropriate entities will continue to pursue and resolve them with all due haste so that the best tools for identifying and solving water quality problems are at hand.

The Henderson Inlet/Nisqually Reach Closure Response Strategy is a working document. Additional information, tasks and activities will be incorporated in future iterations as appropriate.

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APPENDIX A

HENDERSON INLET/NISQUALLY REACH CLOSURE RESPONSE TEAM

Bob Babare	Babare Brothers, Inc.
Lisa Dennis-Perez	City of Lacey
Eric Hielema	City of Lacey
Dennis Ritter	City of Lacey
Emmet Dobey	City of Olympia
Andy Haub	City of Olympia
Steve Langer	Henderson Inlet Watershed Council
Pam Bulldis	National Fish & Oyster Company
Fred Michelson	Nisqually Delta Association
Kris Phelps	Nisqually Indian Tribe
George Walter	Nisqually Indian Tribe
Peter Moulton	Nisqually River Council
Nanette Seto	Nisqually Wildlife Refuge
Tim Ransom	Puget Sound Action Team
Ian Child	Squaxin Tribe
Michelle Anderson	Thurston Conservation District
Scott Brummer	Thurston Conservation District
Don Krupp	Thurston County Development Services
Cindy Wilson	Thurston County Development Services
Sue Davis	Thurston County Environmental Health
Art Starry	Thurston County Environmental Health
Mark Cook	Thurston County Stormwater
Jeannette Barreca	Washington Department of Ecology
Kerry Carroll	Washington Department of Ecology
Don Lennartson	Washington Department of Health
Don Melvin	Washington Department of Health
Paul Pickett	Washington Department of Transportation
Teri King	Washington Sea Grant (UW)
Jerry Yamashita	Western Oyster Company
Bob Simmons	WSU Cooperative Extension

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
Agricultural Sources					
TCD	**BMP implementation:** technical assistance to dairies; cost share for structural BMPs; DNA source testing in Henderson (TC)	County-wide		Conservation Commission	
TCD	**Implementation Grant**: 30 priority farms; technical assistance; goal of 75% implementation		Through 12/2002	CCWF	
TCD	**Conservation Reserve Enhancement Program** – salmon habitat conservation	County-wide	ongoing	USDA/Conserva-tion Commission	
TC	**Source ID & Remediation**	Henderson	12/99-12/01	CCWF	
TC	**E. coli DNA-typing study (part of O&M program** -	Henderson	8/00-7/01	TCD's CCWF	
TC	**Nonpoint Ordinance:** provides civil infractions for allowing domestic animal waste to be washed into surface water; for exceeding agronomic rates of application of manure; for excessive leaching/runoff from manure piles	County-wide	On-going	yes	Nonpoint Ordinance implementation is currently complaint-driven only; farmers with current CD-approved conservation plans are exempt
NRCS	**Forestry Incentive Program**; native vegetation enhancement; wetlands restoration	County-wide	On-going; voluntary		
NRCS	**Wildlife Habitat Incentives Program (WHIP):** Cost-sharing and technical assistance to improve wildlife habitat	County-wide	On-going; voluntary	USDA/state	
Stormwater Sources					
TC	**Source Identification & Remediation**	Henderson WS	12/99-12/01	CCWF	
TC	**E. coli DNA-typing study (part of O&M program**)	Henderson WS	8/00-7/01	TCD's CCWF	
TC	**Private facility maintenance:** enforcement authority	SW Utility district	Began 8/00	SW Utility rates	

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
TC - CFP	**Carpenter Loop:** water quality, flood control	Woodland Cr. Basin (Long Lk)	2000	Dedicated CFP rates	
TC - CFP	**Lake Forest:** water quality, flood control	Woodland Cr. Basin (Long Lk)	2000	Dedicated CFP rates	
TC - CFP	**Tanglewilde South:** water quality, flood control	Woodland Cr. Basin	2000	Dedicated CFP rates	
TC - CFP	**Thompson Place, Phases I, II and III:** water quality control, flood control – groundwater discharges	Woodland Cr. Basin	2001/2002	Dedicated CFP rates	
TC - CFP	**Timberlakes Phases 1-5:** water quality, flood control	Woodland Cr. Basin (Long Lk)	2003/2004	Dedicated CFP rates	
Lacey	**7th Ave. Outfall Treatment Facility;** design underway	Woodland/Lake Lois		CCWF Loan	
Lacey	**College Ditch/St. Martins Treatment Facility:** design funds secured; negotiations for property purchase underway	Woodland		CCWF Loan	
Lacey/Olympia	**15th Ave. NE Storage/Treatment Facility:** funds for property purchase secured; LOTT interested in same parcel	Woodland		CCWF Loan; Olympia SW Utility	
Lacey/Olympia	**Fones Road Treatment Facility:** design underway for an improved treatment system for S. Sound Mall/Fones area	Woodard	On-going	CCFW Loan	
Lacey	**Ruddell Rd. Treatment Facility**	Woodland	Completed 1999		Monitoring shows great fecal removal
Lacey	**Woodland Creek Facility**	Woodland	Completed 1993		Monitoring shows effective fecal removal
Lacey	**City maintenance:** annual cleaning of catch basins, street sweeping, spill response, etc.	City limits	On-going	SW Utility	
Lacey	**Development standards**: all new development/redevelopment required to infiltrate stormwater on site	City limits	On-going, since 1988		Older developments not subject to same high standard
Lacey	**Zero Impact Ordinance:** allows for alternative designs minimizing stormwater generation	City limits	Adopted 1999		Developers not interested in risks associated with unproven methods; needs pilot, model project

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
Lacey	**Shady Lane Facility:** flow mitigation to Hicks Lake	Henderson	Just finished		
Lacey	**Eagle Creek Sub-basin characterization**	Woodland	Not yet funded		
Sewer and Onsite Septic Sources					
TC	**Source ID & Remediation**	Henderson WS	12/99-12/01	CCWF	
TC	**E. coli DNA-typing study (part of O&M program)**	Henderson WS	8/00-7/01	TCD's CCWF	
TC	**Operational Certificate Program**	County-wide	On-going	fees	
TC	**Homeowner Loans** – for repairs of failing systems; 2 tiers, depending on recipient's income	County-wide	Tier 1 – 2001 Tier 2 - 2003	State Revolving Fund grant	
Olympia, Lacey	**Sewer Conversion Program** – homes with failing systems put on sewer if within 200 ft.	City boundaries	On-going	Loans from utility funding	
Olympia, Lacey	**Development standards** – less dense development allowed if onsites involved	Within UGAs	On-going	-	
TC	**On-site Sewage Code compliance** – investigation and follow-up compliance	County-wide	On-going	Permit fees; general fund	Complaint-driven only
Monitoring Water Quality					
DOH	**Marine monitoring:** marine water samples are collected monthly from the Conditionally Approved stations, and six times a year from the Approved and Restricted stations in accordance with FDA regulations.	Henderson Inlet marine waters	On-going	Office budget	
Ecology	**South Sound Nutrient Study:** evaluating nutrient loads from watersheds	Henderson			http://www.ecy.wa.gov/programs/eap/spasm/index.html
Lacey	**Stormwater monitoring:** baseline data on outfalls has been collected; facility monitoring (Ruddell, Woodland)	City Limits/ Woodland	On-going since 1993	SW Utility	Overall contribution from stormwater to fecals in Woodland Creek not quantified

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
TC - CFP	**Carpenter Loop:** water quality, flood control	Woodland Cr. Basin (Long Lk)	2000	Dedicated CFP rates	
TC - CFP	**Lake Forest:** water quality, flood control	Woodland Cr. Basin (Long Lk)	2000	Dedicated CFP rates	
TC - CFP	**Tanglewilde South:** water quality, flood control	Woodland Cr. Basin	2000	Dedicated CFP rates	
TC - CFP	**Thompson Place, Phases I, II and III:** water quality control, flood control – groundwater discharges	Woodland Cr. Basin	2001/2002	Dedicated CFP rates	
TC - CFP	**Timberlakes Phases 1-5:** water quality, flood control	Woodland Cr. Basin (Long Lk)	2003/2004	Dedicated CFP rates	
Lacey	**7th Ave. Outfall Treatment Facility;** design underway	Woodland/Lake Lois		CCWF Loan	
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Lacey/Olympia	**15th Ave. NE Storage/Treatment Facility:** funds for property purchase secured; LOTT interested in same parcel	Woodland		CCWF Loan; Olympia SW Utility	
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Lacey	**Ruddell Rd. Treatment Facility**	Woodland	Completed 1999		Monitoring shows great fecal removal
Lacey	**Woodland Creek Facility**	Woodland	Completed 1993		Monitoring shows effective fecal removal
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Lacey	**Development standards**: all new development/redevelopment required to infiltrate stormwater on site	City limits	On-going, since 1988		Older developments not subject to same high standard
Lacey	**Zero Impact Ordinance:** allows for alternative designs minimizing stormwater generation	City limits	Adopted 1999		Developers not interested in risks associated with unproven methods; needs pilot, model project

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
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Lacey	**Eagle Creek Sub-basin characterization**	Woodland	Not yet funded		
Sewer and Onsite Septic Sources					
TC	**Source ID & Remediation**	Henderson WS	12/99-12/01	CCWF	
TC	**E. coli DNA-typing study (part of O&M program)**	Henderson WS	8/00-7/01	TCD's CCWF	
TC	**Operational Certificate Program**	County-wide	On-going	fees	
TC	**Homeowner Loans** – for repairs of failing systems; 2 tiers, depending on recipient's income	County-wide	Tier 1 – 2001 Tier 2 - 2003	State Revolving Fund grant	
Olympia, Lacey	**Sewer Conversion Program** – homes with failing systems put on sewer if within 200 ft.	City boundaries	On-going	Loans from utility funding	
Olympia, Lacey	**Development standards** – less dense development allowed if onsites involved	Within UGAs	On-going	-	
TC	**On-site Sewage Code compliance** – investigation and follow-up compliance	County-wide	On-going	Permit fees; general fund	Complaint-driven only
Monitoring Water Quality					
DOH	**Marine monitoring:** marine water samples are collected monthly from the Conditionally Approved stations, and six times a year from the Approved and Restricted stations in accordance with FDA regulations.	Henderson Inlet marine waters	On-going	Office budget	
Ecology	**South Sound Nutrient Study:** evaluating nutrient loads from watersheds	Henderson			http://www.ecy.wa.gov/programs/eap/spasm/index.html
Lacey	**Stormwater monitoring:** baseline data on outfalls has been collected; facility monitoring (Ruddell, Woodland)	City Limits/ Woodland	On-going since 1993	SW Utility	Overall contribution from stormwater to fecals in Woodland Creek not quantified

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
TC /cities	**Thurston County Ambient Monitoring Program:** one sample site on Woodland Creek	Woodland	On-going since 1992	Interjurisdiction-al Funding: Lacey SW Utility	Data regarding source of fecals in Henderson needed
Lacey	**Draham Road Culvert:** monthly monitoring of temp., fecals, turbidity and flow (on Woodland Creek)	Woodland	On-going since 1993	SW Utility	Past data from this site intermittent
Lacey	**WQ and Macro-invertebrate Monitoring on Woodland Creek:** conducted quarterly by Stream Team	Woodland	On-going since 1993	SW Utility	Past data from this program intermittent; QA/QC concerns
South Sound Green	**Seven sites –** water quality	Henderson		CCWF - $5K	
TC	**Sediment Study**	Henderson WS	12/99-12/01	CCWF - $28.7K	
Public Information and Involvement Programs					
TC	**Private SW facility O&M:** public outreach and technical assistance	Basin wide	On-going	Base SW Utility rates	
TC	**Septics O&M Program:** workshops; help line/technical assistance; brochure mailers	County-wide	On-going	Permit fees	
TC	**Streamside property owners** outreach & booklet	Woodland/ Woodard Creeks	1999	PIE Fund	
Inter-jurisdictional	**Project Green:** school watershed education program	Basin wide	On-going	Base SW Utility rates	
TRPC/ TC	**ESA Response 2000:** Outreach to public and elected officials to increase awareness of ESA listing and salmon restoration issues	County-wide	6-11/2000	CZM grant	
TC, cities	**Stream Team:** surface and stormwater messages incorporated in events, activities (storm drain stenciling, reveg projects, field classes, volunteer monitoring)	North County	On-going	SW utilities Base rates	Sometimes preaching to the choir, though new members join continually
TCD	Articles, mailings and **general education and outreach** to land occupants in Henderson	Henderson		CCWF $41,792	
TCD	**Pasture management workshops** for small farms	Henderson		CCWF - contd	
TCD	**BMP** fact sheets and TV shows	Countywide		CCWF - contd	

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
WSU	**Real Estate Professional Education Program** – Series of 5 different courses that educates developers/ realtors about the impacts of development on water quality and associated habitat. The courses (onsites; wetlands; salmon; shorelines, low impact development) provide a background in the science of the issue focused on in the course pertinent regulations, best management practices and non-regulatory protection methods.	County-wide	in2001	WSU; user fees	(There will be 7 courses in 2001 with approximately 30 participants each, courses are 7.5-15 hours in length).
WSU	**The Native Plant Salvage Project** educates residents and developers about retaining and restoring native vegetation to protect water resources – to reduce stormwater, increase groundwater recharge, provide filtration and reduce pesticide use	County-wide	1994-2001	WSU budget; jurisdictions; grants	. The program utilizes the efforts of over 250 trained volunteers and has provided learning experiences for over 1500 residents over the past year.
HIWC	**Henderson Inlet Watershed Committee:** annual watershed tour; advocacy for Inlet; county, Lacey participates and sponsors	Henderson	On-going	TC; Lacey SW utility	
Lacey	**General Public Outreach:** onsites, surface and stormwater messages included in newsletters press releases, TV shows, utility bill inserts, etc.	City and UGA	On-going	SW utility	Messages sporadic
Lacey	**Homeowner O&M for Stormwater:** homeowner associations receive info on private facility maintenance; option to participate in work parties	Workshops – all Work parties – city limits only	5/99-5/00; likely to be permanent program	PSAT PIE Fund	Future funding uncertain
TCD	Respond to evidence of stormwater, onsite problems with educational efforts	County-wide	On-going	-	

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
Habitat					
TC	**ESA Inventory:** county regulations and activities that impact salmon and their habitat	County-wide	2000	-	
TC	**ESA Evaluation:** level of risk associated with the impacts of activities and regulations on salmon and their habitat	County-wide	2001	-	
TC	**Conservation Futures Easement/Land Acquisition:** purchase (easement or title) of priority habitat (policy guidance currently in preparation for legislative action)	County-wide	On-going	Conservation Futures levy	
TC (lead)	**Watershed Planning (2514):** WRIA 13 planning (RCW 90.82) – multi-stakeholder approach to water resource management (includes habitat, water quality and in-stream flows)	WRIA 13 (including Henderson watershed)	4 years	Ecology	
TC	**Regional Road Maintenance ESA Program Guidelines:** county has petitioned for participation	ESA affected areas	2000-01		
Lacey	**Salmon Habitat Enhancement:** in-stream and riparian enhancement projects along Woodland Creek; two WCC interns	Woodland	10/00-10/01	City GF ($50K)	
Lacey	**Martin Way Sediment Trap** on Woodland Cr.	Woodland	Pending	SRFB application	
Lacey	**Woodland Creek Habitat Assessment**	Woodland	Looking for funding		
TCD	**Habitat survey** – characterize buffer width, general plant species composition of riparian zone	Woodard/ Woodland Creeks		CCWF $30,451	
TCD	**Identify/prioritize riparian zone buffers** for restoration; implement two demonstration projects	Woodard/ Woodland Creeks		CCWF $30,451	
TCD	**Salmon habitat restoration**	WRIA 13	Annual	SRFB	
TCD	**Refugia study**	WRIA 13	Completed		
TCD	**Lemon Rd. revegetation**	Woodard area	3-01	$5K SRF	

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
Land Use					
Lacey	**Shoreline Property Purchase Program:** along Woodland Cr. And Lake Lois, to provide public access and preserve habitat	Woodland	None currently	ALEA; SRFB	Most recent efforts to obtain funding for purchases along Lake Lois and near Pleasant Glade Rd. crossing unsuccessful
Olympia	**Zoning & Development Standards Revision:** Green Cove process	Green Cove currently	On-going		
TC; Capitol Land Trust	**Development Rights Acquisition:** preservation of open space, Ag lands, fish and wildlife habitat, and other environmentally sensitive areas through purchase and/or transfer of development rights, conservation easements, and fee simple donations and acquisitions.	County-wide	On-going	Real estate excise tax (county); donations, service contracts, mitigation funds (Land Trust)	

Abbreviations:

BMP	Best Management Practice	TC	Thurston County
CFP	Capital Facilities Program	TCD	Thurston Conservation District
CCWF	Centennial Clean Water Fund	TRPC	Thurston Regional Planning Council
CZM	Coastal Zone Management	UGA	Urban Growth Management Area
DOH	Washington Department of Health	USDA	United States Department of Agriculture
NRCS	Natural Resources Conservation Service	WCC	Washington Conservation Commission
PSAT	Puget Sound Action Team	WSU	Washington State University (Cooperative Extension)
SW	Stormwater		

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
Agricultural Sources					
TCD	**319 Grant**: Conservation Planning; Vegetable growers; horse manure demonstration project (Yelm); supports NREP in part	Nisqually watershed	Thru 3/2001	319 (federal)	
TCD	**BMP implementation:** technical assistance to dairies; cost share for structural BMPs	County-wide		Conservation Commission	
TCD	**Poultry Farmers:** workshops, video	Nisqually		Poultry grant	
TCD	**Conservation Planning**	Budd-Deschutes and Nisqually	Thru 12/01	Conservation Commission	
TCD	**Conservation Reserve Enhancement Program** – salmon habitat conservation	County-wide	ongoing	USDA/Conserv-ation Commission	
TC	**Nonpoint Ordinance:** provides civil infractions for allowing domestic animal waste to be washed into surface water; for exceeding agronomic rates of application of manure; for excessive leaching/runoff from manure piles	County-wide	On-going		Nonpoint Ordinance implementation is currently complaint-driven only; farmers with current CD-approved conservation plans are exempt
NRCS	**Forestry Incentive Program**; native vegetation enhancement; wetlands restoration	County-wide	On-going; voluntary		
NRCS	**Wildlife Habitat Incentives Program (WHIP):** Cost-sharing and technical assistance to improve wildlife habitat	County-wide	On-going; voluntary	USDA/ Conservation Commission	
Ecology	**Enforcement sweep –** compliance of non-dairy animal keeping with state water quality rules	Prioritized area McAllister	Upon request	state	
Stormwater Sources					
TC	**Private facility maintenance:** enforcement authority	SW Utility district	Began 8/00	SW Utility rates	

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
TC	**CFP: Mallard Pond:** flow mitigation, water quality, habitat; corrective for Little McAllister Cr. Discharge	McAllister Cr.	2000-01	Dedicated CFP rates	
TC	**CFP: Pacific Avenue Wetland:** flow mitigation, water quality, habitat; corrective for Little McAllister Cr. Discharge	McAllister Cr	2000-01	Dedicated CFP rates	
Lacey	**City maintenance:** annual cleaning of catch basins, street sweeping, spill response, etc.	City limits	On-going	SW Utility	
Lacey	**Development standards**: all new development/redevelopment required to infiltrate stormwater on site	City limits; UGA	On-going, since 1988		Older developments not subject to same high standard
Lacey	**Zero Impact Ordinance:** allows for alternative designs minimizing stormwater generation	City limits; UGA	Adopted 1999		Developers not interested in risks associated with unproven methods; needs pilot, model project
Sewer and Onsite Septic Sources					
TC	**Operational Certificate Program**	County-wide	On-going	fees	
TC	**Homeowner Loans** – for repairs of failing systems; 2 tiers, depending on recipient's income	County-wide	Tier 1 –> 2001 Tier 2 -> 2003	State Revolving Fund grant	
Olympia, Lacey	**Sewer Conversion Program** – homes with failing systems put on sewer if within 200 ft		On-going	Loans from utility funding	
Olympia, Lacey	**Development standards** – less dense development allowed if onsites involved	Within UGAs	On-going	-	
TC	**On-site Sewage Code compliance** – investigation and follow-up compliance	County-wide	On-going	Permit fees	Complaint-driven only

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
Monitoring Water Quality					
DOH	**Marine monitoring:** marine water samples are collected monthly from the Conditionally Approved stations, and six times a year from the Approved and Restricted stations in accordance with FDA regulations.	Nisqually Reach marine waters	On-going	Office budget	
Ecology	**South Sound Nutrient Study:** evaluating nutrient loads from watersheds	Nisqually/ McAllister			http://www.ecy.wa.gov/programs/eap/spasm/index.html
Ecology	**Station Nisqually 202**				
Nisqually River Education Project (NREP)	Water quality testing by students (Level 2 volunteer monitoring program)	Basin wide: Currently off River Ridge High	On-going	CCWF & Yelm Community Schools	
Public Information and Involvement Programs					
TC	**Private SW facility O&M:** public outreach and technical assistance	Basin wide	On-going	Base SW Utility rates	
TC	**Septics O&M Program:** workshops; help line/technical assistance; brochure mailers	County-wide	On-going	Permit fees	
TC	**Streamside property owners** outreach & booklet	McAllister Cr.	1999	PIE Fund	
Nisqually River Education Project (NREP)	**School watershed education program**	Basin wide	On-going	Base SW Utility rates	
TRPC/TC	**ESA Response 2000:** Outreach to public and elected officials to increase awareness of ESA listing and salmon restoration issues	County-wide	6-11/2000	CZM grant	

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
WSU	**Real Estate Professional Education Program** – Series of 5 different courses that educates developers/ realtors about the impacts of development on water quality and associated habitat . The courses (onsites; wetlands; salmon; shorelines, low impact development) provide a background in the science of the issue focused on in the course (ie. wetlands) pertinent regulations, best management practices and non-regulatory protection methods.	County-wide	2000-2001	WSU; user fees	There will be 7 courses in 2001 with approximately 30 participants each, courses are 7.5-15 hours in length.
WSU	**The Native Plant Salvage Project** educates residents and developers about retaining and restoring native vegetation to protect water resources – to reduce stormwater, increase groundwater recharge, provide filtration and reduce pesticide use.	County-wide	1994-2001	WSU; jurisdictions; grants	The program utilizes the efforts of over 250 trained volunteers and has provided learning experiences for over 1500 residents over the past year.
TCD	Respond to evidence of stormwater, onsite problems with educational efforts	County-wide	On-going	-	
Nisqually Tribe	**Nisqually Stream Stewards**	Basin-wide	On-going, with funding	SRFB	
TC, cities	**Stream Team:** surface and stormwater messages incorporated in events, activities (storm drain stenciling, revegetation projects, field classes, volunteer monitoring)	North County	On-going	SW utilities Base rates	Sometimes preaching to the choir, though new members join continually
Nisqually River Council	**Nisqually River Council**: stakeholder events; advocacy for basin environmental issues	Nisqually WS	On-going	state	
Lacey	**General Public Outreach:** surface and sw messages included in newsletters press releases, TV shows, utility bill inserts, etc.	City and UGA	On-going	SW utility	Messages sporadic
Lacey	**Homeowner O&M for Stormwater:** homeowner associations receive info on private facility maintenance; option to participate in work parties	Workshops – all Work parties – city limits only	5/99-5/00; likely to be permanent program	PSAT PIE Fund	Future funding uncertain

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
Habitat					
TC	**ESA Inventory:** county regulations and activities that impact salmon and their habitat	County-wide	2000	-	
TC	**ESA Evaluation:** level of risk associated with the impacts of activities and regulations on salmon and their habitat	County-wide	2001	-	
TC	**Conservation Futures Easement/Land Acquisition:** purchase (easement or title) of priority habitat (policy guidance currently in preparation for legislative action)	County-wide	On-going	Conservation Futures levy	
Nisqually Tribe (lead)	**Watershed Planning (2514):** WRIA 11 planning (RCW 90.82) – multi-stakeholder approach to water resource management (includes habitat, water quality and in-stream flows)	WRIA 11	4 years	Ecology	
TC	**Regional Road Maintenance ESA Program Guidelines:** county has petitioned for participation	ESA affected areas	2000-01		
Lacey	**Little McAllister Habitat Assessment –** needed to protect and enhance existing habitat	Little McAllister	Awaiting funding		Two unsuccessful applications for funding so far
TCD	**Yelm Creek restoration**; wetlands restoration	Yelm Creek	Thru 3/01	319 Grant	
Yelm	**Yelm Creek Management Plan**	Yelm Creek		FFCAP	
TC	**Flood damage properties:** acquisition program				

AGENCY	Current and Planned Programs/Activities	Basin / Area	Duration of work	Funding Source	Comments
Land Use					
TC; Nisqually River Basin Land Trust	**Development Rights Acquisition:** preservation of open space, ag lands, fish and wildlife habitat, and other environmentally sensitive areas through purchase and/or transfer of development rights, conservation easements, and fee simple donations and acquisitions.	County-wide	On-going	Real estate excise tax (county); donations, service contracts, mitigation funds (Land Trust)	

Abbreviations:

BMP	Best Management Practice	PSAT	Puget Sound Action Team
CFP	Capital Facilities Program	SRFB	Salmon Recovery Funding Board
CCWF	Centennial Clean Water Fund	SW	Stormwater
CZM	Coastal Zone Management	TC	Thurston County
DOH	Washington Department of Health	TCD	Thurston Conservation District
FFCAP	Federal Flood Control Assistance Program	TRPC	Thurston Regional Planning Council
NRCS	Natural Resources Conservation Service	UGA	Urban Growth Management Area
NREP	Nisqually River Education Project	USDA	United States Department of Agriculture
		WSU	Washington State University (Cooperative Extension)

Appendix D

Henderson Inlet Closure Response Strategy
Objective and Task Matrix

February 28, 2001

Objectives and Tasks	Responsible Entity	Timeline	Funding Available	Funding Source	Done
Objective 1: Establish a Coordinated Response Program					
Task H1.1: Set up Closure Response Team; identify lead agency for strategy development	DOH	Nov 2000	Y	DOH Restoration Budget	✔
Task H1.2: Coordinate/facilitate work group	PSAT	Jan 2001	Y	Agency Budgets	✔
Task H1.3: Develop strategy	TC/PSAT in coordination with team	Jan 2001	Y	Agency Budgets	✔
Task H1.4: Act as a response strategy implementation review committee; convene quarterly reviews involving stakeholders	HIWC	Until goals met	Partial		
Task H1.5: Compose an annual report card for progress in strategy implementation	Implementation Review Committee	Annually, until goals met	No		
Task H1.6: Provide information to inhabitants of the watershed and stakeholders on progress in strategy implementation	Implementation Review Committee	Semi-annually, until goals met	No		
Objective 2: Establish a Shellfish Protection District and Program					
Task H2.1: Draft protection district boundaries, programs and funding plan.	TC	July 2001	Y	Agency budget	
Task H2.2: Adopt a shellfish response and protection program	TC	July 2001	Y	Agency budget	
Task H2.3: Implement Shellfish Protection District programs	TC	On-going after 7/01	N		

Objectives and Tasks	Responsible Entity	Timetable	Funding Available	Funding Source	Done
Objective 3: Establish Jurisdictional Responsibilities and Options					
Task H3.1: Acquire Attorney General's opinion on applicability of RCW 43.70.185 (Inspection of property where marine species located)	DOH		Y		
Objective 4: Identify & Control Agricultural Sources					
Task H4.1: Inventory all farms in the watershed; review existing information and separately map (1) all farms that potentially impact surface water, and (2) all those farms that are working with TCD and/or have implemented BMPs	TCD	2-7/01	Y	CCWF	
Task H4.2: Prioritize farm planning needs in the watershed	TCD	2-7/01	Y	CCWF	
Task H4.3: Complete and implement high priority farm plans	TCD	By 12/31/02	Y	CCWF	
Task H4.4: Ensure compliance of farms with Thurston County Nonpoint Ordinance and state water quality laws	TC; Ecology	On-going	Y	Agency budgets	
Task H4.5: Review MOU to ensure coordination and effective communication between agencies providing technical assistance and regulatory oversight	Ecology, TC, TCD	By 3/01	Y	Agency budgets	
Objective 5: Identify & Control Stormwater Sources					
Task H5.1: Map stormwater outfalls discharging to surface and marine waters	TC; Lacey; Olympia; WSDOT	County - 2/02 Cities – done WSDOT -done	TC -N Cities -Y WSDOT -Y	City budgets WSDOT budget	✔ ✔
Task H5.2: Design and implement a representative sampling process to determine the magnitude of fecal coliform bacteria at mitigated and unmitigated stormwater	TC Lacey; Olympia DOH; WSDOT	Design done; Implement asap, precipitation permitting; by	Y	CCWF grant to TC; local utilities; State agency budgets	

outfalls		6/01			
Objectives and Tasks	**Responsible Entity**	**Timetable**	**Funding Available**	**Funding Source**	**Done**
Task H5.3: If significant contaminant inputs found, conduct site-specific investigations of priority outfalls	TC; Lacey; Olympia; WSDOT	by 6/02	TC & cities –N	WSDOT budget	
Task H5.4: Update and implement capital facilities plans to address prioritized stormwater treatment needs	TC; Lacey; Olympia; WSDOT	On-going	Y	Utilities WSDOT budget	
Task H5.5: Establish a public outreach program to facilitate proper maintenance of privately owned stormwater facilities	TC; Lacey Olympia	On-going	N		
Task H5.6: Continue public education efforts through Stream Team and other water resource education programs	TC; Lacey; Olympia; TCD; HIWC; WSU	On-going	Y	Utilities	
Task H5.7: Review and modify drainage system maintenance practices to prevent generation of suspended solids and to provide suspended solids removal	TC	On-going; response to ESA listings	Y	Agency budgets	
Objective 6: Identify & Control OSS Sources					
Task H6.1: Include an element in the existing O&M program for regular evaluation of onsite systems, which, if failing, pose a risk to surface water quality	TC	By 12/1/2001	Y	Agency budget	
Task H6.2: Conduct special studies in neighborhoods where conditions (soils, groundwater levels, onsite system ages) may be contributing to OSS failures	TC	On-going; as needed	Y	Water Quality Monitoring Fee Fund	
Task H6.3: Provide education and technical assistance on septic system O&M	TC; Lacey; Olympia; WSU; WASG	On-going	Partial	TC, cities -Permit fees	
Task H6.4: Establish an incentive program to promote proper O&M of onsite septic systems	TC; Lacey; Olympia	By 12/01	N		

Objectives and Tasks	Responsible Entity	Timetable	Funding Available	Funding Source	Done
Task H6.5: Provide low interest loans to repair of failing and suspect septic systems	TC; Olympia	On-going	Y	SRF	✔
Objective 7: Monitor Water Quality					
Task H7.1: Conduct TMDL for Henderson basin	Ecology	July 2001-July 2002	Applied for	Agency budget	
Task H7.2: Maintain current level of marine water quality monitoring	DOH	On-going	Y	Agency budget	
Task H7.3: Establish additional marine and freshwater sampling sites as needed to identify pollution sources revealed by other studies; coordinate with Ecology's sampling program	DOH	2-12/01	Y	Agency budget	
Task H7.4: Provide monthly data summaries of marine and freshwater monitoring to strategy implementers and shellfish growers	DOH	On-going	Y	Agency budget	
Task H7.5: Re-establish broader ambient monitoring program in the watershed to monitor trends in water quality	TC, Lacey; Olympia	As soon as funding is available	N		
Task H7.6: Monitor success in improving road drainage system maintenance practices and retrofitting outfalls for sediment transport control	TC	On-going	Y	Agency budget	
Objective 8: Expand Public Education & Involvement Programs					
Task H8.1: Support expansion of the Henderson Watershed Council membership base	TC; Ecology; PSAT; DOH; TCD, WSU	By 6/2001	Y	Agency budgets	
Task H8.2: Explore development of a neighborhood-based, water quality advocacy program to raise awareness and foster ownership of clean water	EETAC	By 12/01	Y	Agency budgets	

Objectives and Tasks	Responsible Entity	Timetable	Funding Available	Funding Source	Done
Task H8.3: Conduct workshops/events and TCTV shows and articles to educate landowners about responsible farm management, habitat restoration and water quality issues in the watershed	TCD	On-going	Y	Ecology grant	
Task H8.4: Educate and involve teachers and students to monitor water quality in the watershed and restore native habitats	South Sound GREEN	By 12/31/02	Y	Ecology grant	
Task H8.5: Engage the public in issues surrounding water quality and watershed health through use of public events, local media, youth education programs and outreach materials	TC; Olympia; WSU; HIWC	On-going	Partial	Stormwater utilities	
Objective 9: Review and Comment on Land Use Decisions					
Task H9.1: Evaluate development proposals within the affected watersheds for potential impacts upon the shellfish resource and take action to avoid or mitigate such impacts	TC; Lacey; Olympia	On-going	Y	Agency budgets	
Task H9.2: Inform the Implementation Review Committee about pending development proposals within the watershed	TC; Lacey; Olympia	As long as IRC exists	Y	Agency budgets	
Task H9.3: Evaluate and address means to encourage low impact development and minimize effective impervious surface and stormwater runoff	TC; Lacey; Olympia	On-going	Y	Agency budgets	
Task H9.4: Evaluate and address the implications of Comprehensive Plan goals, objectives, policies and implementing regulations upon the shellfish resource as comprehensive plans, critical areas ordinances and shoreline master programs are updated	TC; Lacey; Olympia	By 12/04	N	Ecology; OCD	

Abbreviations

CCWF	Centennial Clean Water Fund	SSWU	Thurston County Storm and Surface Water Utility
DOH	Washington State Department of Health	TC	Thurston County
Ecology	Washington State Department of Ecology	TCD	Thurston Conservation District
EETAC	Environmental Education Technical Advisory Committee of Thurston County		
HIWC	Henderson Inlet Watershed Council	WASG	Washington Sea Grant
IRC	Implementation Review Committee	WSDOT	Washington State Department of Transportation
PSAT	Puget Sound Action Team	WSU	Washington State University

Appendix E

Nisqually Reach Closure Response Strategy
Objective and Task Matrix

February 28, 2001

Objectives and Tasks	Responsible Entity	Timeline	Funding Available	Funding Source	Done
Objective 1: Establish a Coordinated Response Program					
Task N1.1: Set up Closure Response Team; identify lead agency for strategy development	DOH	Nov 2000	Y	DOH Restoration Budget	✔
Task N1.2: Coordinate/facilitate work group	PSAT	Jan 2001	Y	Agency Budgets	✔
Task N1.3: Develop strategy	TC/PSAT in coordination with team	Jan 2001	Y	Agency Budgets	✔
Task N1.4: Act as a response strategy implementation review committee; convene quarterly reviews involving stakeholders	NRC	Until goals met	Y	Agency Budgets	
Task N1.5: Compose an annual report card for progress in strategy implementation	Implementation Review Committee	Annually, until goals met	Y	Agency budgets	
Task N1.6: Provide information to inhabitants of the watershed and stakeholders on progress in strategy implementation	Implementation Review Committee	Semi-annually, until goals met	Y	Agency budgets	
Objective 2: Establish a Shellfish Protection District and Program					
Task N2.1: Draft protection district boundaries, programs and funding plan.	TC	By July 2001	Y	Agency budget	
Task N2.2: Adopt a shellfish response and protection program	TC	By July 2001	Y	Agency budget	
Task N2.3: Implement Shellfish Protection District programs	TC	On-going after 7/01	N		

Objectives and Tasks	Responsible Entity	Timetable	Funding Available	Funding Source	Done
Objective 3: Establish Jurisdictional Responsibilities and Options					
Task N3.1: Acquire Attorney General's opinion on applicability of RCW 43.70.185 (Inspection of property where marine species located)	DOH		Y		
Objective 4: Identify & Control Agricultural Sources					
Task N4.1: Inventory all farms in the McAllister and Nisqually Reach watersheds; review existing information and separately map (1) all farms that potentially impact surface water and (2) all of those farms that are working with TCD and/or have implemented BMPs	TCD	2-12/01	N		
Task N4.2: Investigate non-dairy farms in the McAllister and Nisqually Reach watersheds not currently working with TCD and/or without current farm plans for source identification and compliance; refer farms to TCD for planning and BMP implementation as appropriate	Ecology	2-6/01	Y	Existing	
Task N4.3: Prioritize farm planning needs in the watersheds	TCD	By 2/25/01	Y	WSCC Implementation grant	
Task N4.4: Complete and implement high priority farm plans in the watersheds	TCD	By 12/02	Partial	WSCC Implementation grant (ends 6/01) 319 (ends 3/31/01)	
Task N4.5: Ensure compliance of farms with Thurston County Nonpoint Ordinance and state water quality laws	TC; Ecology	On-going	Y	Agency budgets	

Objectives and Tasks	Responsible Entity	Timetable	Funding Available	Funding Source	Done
Task N4.6: Map and resample outfalls (tide gates) on McAllister under storm flow conditions	Ecology; Nisqually Tribe	Implement asap, precipitation permitting	Y	Agency budgets	
Task N4.7: Review MOU to ensure coordination and effective communication between agencies providing technical assistance and regulatory oversight	Ecology, TC, TCD	By 3/01	Y	Agency budgets	
Objective 5: Identify & Control Stormwater Sources					
Task N5.1: Map stormwater outfalls discharging to surface and marine waters in McAllister watershed	TC Lacey WSDOT	County – 2/02 Lacey – done WSDOT - done	TC-N Lacey-Y WSDOT -Y	City budget WSDOT budget	n ✔ ✔
Task N5.2: Design and implement a representative sampling process to determine the magnitude of fecal coliform bacteria at mitigated and unmitigated stormwater outfalls	TC; Lacey; DOH; WSDOT	Design completed; Implement asap, precipitation permitting; by 6/01	Y	CCWF; local utilities; state agency budgets	
Task N5.3: If significant contaminant inputs found, conduct site-specific investigations of priority outfalls	TC; Lacey WSDOT	By 6/02	N	WSDOT budget	
Task N5.4: Evaluate hydraulic influence of I-5 and Martin Way fills and channelization on McAllister Creek flows	WSDOT		Y	Agency budget	
Task N5.5: Evaluate site restoration and enhancement opportunities that include improvement of follow-related habitat functions and mixing in McAllister Creek	WSDOT		Y	Agency budget	
Task N5.6: Update and implement capital facilities plans to address prioritized stormwater treatment needs	TC; WSDOT	On-going	Y	Utility; WSDOT budget	

Objectives and Tasks	Responsible Entity	Timetable	Funding Available	Funding Source	Done
Task N5.7: Establish a public outreach program to facilitate proper maintenance of privately owned stormwater facilities	TC	By 6/01	N		
Task N5.8: Continue public education efforts through Stream Team and other water resource educational programs	TC; Lacey; Olympia; NRC; TCD; WSU	On-going	Y	Utilities	
Task N5.9: Review and modify drainage system maintenance practices to prevent generation of suspended solids and to provide suspended solids removal	TC	On-going; response to ESA listings	Y	Agency budget	
Objective 6: Identify & Control OSS Sources					
Task N6.1: Include an element in the existing O&M program for regular evaluation of onsite systems, which, if failing, pose a risk to surface water quality	TC	By 12/1/2001	Y	Agency budget	
Task N6.2: Conduct special studies in neighborhoods where conditions (soils, groundwater levels, onsite system ages) may be contributing to OSS failures	TC	On-going; as needed	Y	Water Quality Monitoring Fee Fund	
Task N6.3: Provide education and technical assistance on septic system O&M	TC; Lacey; Olympia; WSU; WASG	On-going	Partial	TC, cities -Permit fees	
Task N6.4: Establish an incentive program to promote proper O&M of onsite septic systems	TC; Lacey; Olympia	By 12/01	N		
Task N6.5: Provide low interest loans to repair of failing and suspect septic systems	TC	On-going	Y	SRF	✔
Objective 7: Monitor Water Quality					
Task N7.1: Conduct TMDL for Nisqually basin	Ecology	July 2001-July 2002	Applied for	Agency budget	

Objectives and Tasks	Responsible Entity	Timetable	Funding Available	Funding Source	Done
Task N7.2: Maintain current level of marine water quality monitoring	DOH	On-going	Y	Agency budget	
Task N7.3: Continue freshwater monitoring regime in the Nisqually watershed and consider adding stations on the river and McAllister Creek	DOH	On-going	Y	Agency budget	
Task N7.4: Establish additional marine and freshwater sampling sites as needed to identify pollution sources revealed by other studies; coordinate with Ecology's sampling program	DOH	2-12/01	Y	Agency budget	
Task N7.5: Provide monthly data summaries of marine and freshwater monitoring to strategy implementers and shellfish growers	DOH	On-going	Y	Agency budget	
Task N7.6: Re-establish broader ambient monitoring program in the McAllister watershed to monitor trends in water quality	TC, Lacey; Olympia	As soon as funding is available	N		
Task N7.7: Maintain Nisqually River monitoring station	Ecology	On-going	Y	Agency budget	
Task N7.8: Monitor success in improving road drainage system maintenance practices and retrofitting outfalls for sediment transport control	TC	On-going	Y	Agency budget	
Objective 8: Expand Public Education & Involvement Programs					
Task N8.1: Pursue funding for development of a neighborhood-based, water quality advocacy program to raise awareness and foster ownership of clean water	TCD	6/01	Y	Agency budget	

Objectives and Tasks	Responsible Entity	Timetable	Funding Available	Funding Source	Done
Task N8.2: Conduct workshops/events and TCTV shows and articles to educate landowners about responsible farm management, habitat restoration and water quality issues in the watershed	TCD	On-going	Partial	WSCC Implementation grant	
Task N8.3: Continue existing student monitoring and identify additional monitoring sites as an early warning system	Nisqually River Education Project	On-going	Partial	Yelm School District, CCWF	
Task N8.4: Engage the public in issues surrounding water quality and watershed health through use of public events, local media, youth education programs and outreach materials	TC; Lacey; Olympia; WSU; NRC	On-going	Partial	Stormwater utilities	
Objective 9: Review and Comment on Land Use Decisions					
Task N9.1: Evaluate development proposals within the affected watersheds for their potential impacts upon the shellfish resource and take action to avoid or mitigate such impacts	TC, Lacey; Olympia	On-going	Y	Agency budgets	
Task N9.2: Inform the Implementation Review Committee about pending development proposals within the watershed	TC, Lacey; Olympia	As long as IRC exists	Y	Agency budgets	
Task N9.3: Evaluate and address means to encourage low impact development and minimize effective impervious surface and stormwater runoff	TC; Lacey	On-going	Y	Agency budgets	
Task N9.4: Evaluate and address the impli-cations of Comprehensive Plan goals, objectives, policies and implementing regulations upon the shellfish resource as comprehensive plans, critical areas ordinances and shoreline master programs are updated	TC; Lacey	By 12/04	N	Ecology; OCD	

Abbreviations

CCWF	Centennial Clean Water Fund
DOH	Washington State Department of Health
Ecology	Washington State Department of Ecology
IRC	Implementation Review Committee
NRC	Nisqually River Council
PSAT	Puget Sound Action Team
SSWU	Thurston County Storm and Surface Water Utility
TC	Thurston County
TCD	Thurston Conservation District
WASG	Washington Sea Grant
WSDOT	Washington State Department of Transportation
WSU	Washington State University